पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड
(पावरग्रिड की पूर्ण स्वामित्व प्राप्त सहायक कंपनी)
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(A wholly owned subsidiary of POWERGRID)

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Ref No. : NLDC/ Operational Feedback/ Date: 4th January 2012

To,

Member (Power Systems),
Central Electricity Authority,
R K Puram, New Delhi

Executive Director (SEF)
POWERGRID
Gurgaon

Subject: Operational Feedback on Transmission Constraints: Connectivity of Rajasthan System

Ref: Clause 4(j) of National Load Despatch Centre Rules, 2005

Sir,

The 400 kV state transmission system of Rajasthan is connected to the inter-state transmission system (ISTS) in NEW grid at Bhiwadi (POWERGRID), Bassi (POWERGRID) and 400 kV Kankroli/ Bhinmal. Beyond 400 kV Bassi, the connecting link is 400 kV Bassi-Heerapura D/C. Although the length of above tie line is small, any outage on this section makes the entire Rajasthan system insecure as the margin available on the 400/220 kV ICTs at Bassi and Bhiwadi is not adequate to take care of the outage on 400 kV Bassi-Hirapura D/C. Probability of such outages is high during the winter fog conditions as evident during the early morning hours of 2nd and 4th January 2012. Load shedding in Rajasthan was required to the extent of 300-400 MW to ensure that the system was secure. The sensitivity of the major interconnections of Rajasthan with the ISTS for outage of 400 kV Bassi-Heerapura circuits as observed in the offline simulation of the above 2nd January 2012 scenario is enclosed as Annex-I.

It is understood that provisions have been made for augmenting the transmission system in Rajasthan through new 400/220 kV substations at Jaipur South, Sikar, Kotputli and Neemrana as well as through new 765/400 kV substation at Jaipur and Anta. However for reliability the following interconnections may also be considered: -

1. Interconnection of 400 kV Dholpur with 400 kV Agra/ Gwalior [say by LILO of 400 kV Agra-Bassi at 400 kV Dholpur]
2. Interconnection of 400 kV Chabra with 400 kV Shujalpur/ Bina [say by LILO of proposed Shujalpur (or Nagda) –RAPS-C at 400 kV Chabra or at 400 kV Kalisindh]
3. Interconnection of 400 kV Suratgarh or Ratangarh with 400 kV Moga/ Fatehabad /Hisar

Both 400 kV Dholpur and 400 kV Chabra are close to the eastern border of Rajasthan. The suggested interconnection of 400 kV Dholpur with Agra and or 400 kV Chabbra with 400 kV Sujalpur/Bina would create additional parallel link between Bassi-Heerapura via the existing

400 kV Hindaun-Heerapura. It would strengthen the interconnection of Northern Region with Western Region which is usually stressed due to overloading of 400 kV Bina-Gwalior-Agra section. In addition, the reliability of evacuation from Chabbra as well as the upcoming generating stations at Kalisindh/Kawai in South Rajasthan would also be enhanced. The distance of Dholpur from Agra/ Gwalior is of the order of 60 km and that of Chabra from Shujalpur/ Bina is 190 km. Connectivity of these remote stations with other state grid points has been planned by the concerned state transmission utility for generation evacuation or meeting the remote end load without considering the ISTS system. Additional interface with the ISTS under integrated planning would strengthen the connection and increase reliability.

Likewise, Suratgarh TPS is a large generating complex of Rajasthan with an installed capacity of 1500 MW. Additional connection with Moga/ Fatehabad would strengthen both connectivity of Rajasthan system and evacuation of Suratgarh TPS as well as reliability of Punjab system during the high demand period between June to September when Rajasthan load is at its trough. Incidentally a similar feedback had been given by NRLDC while investigation the grid disturbance in Punjab system on 20th July 2011. A copy of the report has already been forwarded to the CEA and CTU as part of our feedback vide letter dated 5th October 2011.

It is expected the above measures would enhance the overall reliability of Rajasthan system as well as NEW grid and also contribute towards the increasing import transfer capability of the state.

Thanking You,

Yours faithfully,

(V K Agrawal)
General Manager, NLDC

Copy to:

1) CMD, Rajasthan Rajya Vidyut Prasaran Nigam Limited, Vidyut Bhawan, Janpath, Jaipur-302 005

2) General Manager, NRLDC, POSOCO, New Delhi

Annex I

Sensitivity of Major Tie lines in Rajasthan System towards outage of 400kV Bassi-Heerapura DC

Important lines	Basecase	400kV Bassi-Heerapura DC out	N-1 of Bassi ICT-1	Distribution Factor Case-A	Distribution Factor Case-B
		Case A	Case B		
400kV Bassi-Heerapura-1	181	0	0	-51%	-
400kV Bassi-Heerapura-2	176	0	0	-49%	-
400/220kV Bassi ICT-1	114	209	0	27%	-100%
400/220kV Bassi ICT-2	114	209	324	27%	55%
400/220kV Bhiwadi ICT-1	200	216	228	4%	6%
400/220kV Bhiwadi ICT-2	200	216	228	4%	6%
220kV BTPS-MIA Alwar	99	108	117	3%	4%
220kV Sikandra-Bharatpur	78	105	120	8%	7%
220kV Charkhi Dadri-Khetri-1	37	73	87	10%	7%
220kV Hisar- Chirawa	7	18	21	3%	1%
220kV Badshahpur-Bhiwadi	23	27	33	1%	3%
Import of NR from WR	728	746	754	5%	4%
400kV Gwalior-Agra-1	352	334	326		
400kV Gwalior-Agra-2	356	338	329		
400kV Zerda-Kankroli	-46	-25	-14		
400kV Zerda-Bhinmal	18	38	45		
220kV Badod-Modak	48	61	68		